

REMARKS

Claims 1-12 and 15-17 are pending in the application. Upon entry of the present amendment, claims 1, 3 and 6 will be amended. Entry of the present amendment, reconsideration of the rejection and allowance of the pending application in view of the following remarks are respectfully requested.

In the Final Office Action, the Examiner objected to claims 1 and 3 because of informalities. Upon entry of the present amendment, claims 1 and 3 will be amended in accordance with the requirements the Examiner set forth on page 2 of the Final Office Action to overcome the claim objections. Thus, Applicants respectfully submit that, upon entry of the present amendment, claims 1 and 3 will be amended to overcome the claim objections.

In the Office Action, the Examiner rejected claims 1-3, 16 and 17 under 35 U.S.C. §103(a) as being unpatentable over Andrews (U.S. Patent No. 5,757,413) in view of Koide (U.S. Patent No. 5,181,137). Applicants respectfully traverse the rejection for at least the following reasons.

In the specification of the present application, Applicants disclose an embodiment of a multi-beam scanning device which includes a polygonal mirror, and an optical system. The optical system includes a plurality of optical path turning systems. Each of the optical path turning systems includes a first reflection surface which is positioned along a direction in which light beams are deflected by the polygonal mirror. The optical path turning system which is the farthest away from the polygonal mirror includes a prism having two reflection surfaces. The first reflection surface is one of the two reflection surfaces of the prism.

Andrews is directed towards a raster output scanner (ROS) arrangement 10 which employs a light generating device 34. See Figure 2 and col. 3, lines 46-53. The light generating device 34 emits four laser beams 46, 48, 50 and 52. See Figure 2 and col. 3, lines 55-58. The four laser beams 46, 48, 50 and 52 illuminate a rotating polygon mirror 18 and are input to a first optical filter 86, and the beam 46 is delivered to a photoreceptor 24 by use of a mirror 88. See Figures 2 and 5 and col. 4, lines 4-10, 29-30 and 39-41.

Beams 48, 50 and 52 pass through the first optical filter 86, and are successively reflected by optical filters 90, 92 and 94. See Figure 5 and col. 4, lines 57-59. Beam 48 is reflected by filter 90 and delivered to photoreceptor 26 by way of mirrors 96, 98 and 100; beam 50 is reflect by filter 92 and delivered to photoreceptor 28 by way of mirrors 102, 104 and 106; and beam 52 is reflected by filter 94 and delivered to photoreceptor 28 by way of a mirror 108. See Figure 5 and col. 4, line 64 – col. 5, line 3. Figure 5 shows that the combination of optical filter 94 and mirror 108 is located further from polygon mirror 18 than the other optical filter-mirror combinations which reflect beams 46, 48 and 50.

Applicants respectfully submit that the combination of optical filter 94 and mirror 108 does not include a prism having two reflection surfaces. Applicants further submit that it would not be obvious to modify Andrews, such that the combination of optical filter 94 and mirror 108 includes a prism having two reflection surfaces, including a reflection surface which is positioned along a direction in which light beams are deflected by the polygon mirror 18. Applicants respectfully submit that if one were to insert a prism in the place of optical filter 94 (i.e., in a direction in which light beams are

deflected by the polygon mirror 18), beam 52 could not be reflected onto photoreceptor 30.

Further, in the Office Action, the Examiner acknowledges that Andrews' photoreceptors 24, 26, 28, 30 are not arranged from a position closer to the polygon mirror 18 to a position farther from the polygon mirror 18. However, the Examiner asserts that it, in view of Koide, would have been obvious to modify Andrews to rearrange the photoreceptors 24, 26, 28 and 30 in this fashion, asserting that this would merely change the position of components without modifying the operation of the device. Applicants respectfully disagree.

Applicants respectfully submit that if one were to modify Andrews to rearrange the photoreceptors 24, 26, 28 and 30 in the same manner as Koide's scan planes 50-53, the optical path lengths of Andrews' beams 46, 48, 50 and 52 would no longer be substantially the same.

In view of the above, Applicants respectfully submit that the combination of Andrews and Koide fails to disclose or suggest a multi-beam scanning device which includes an optical system that converges deflected light beams on a plurality of objects to be scanned, which are arranged from a position closer to a polygonal mirror to a position farther from the polygonal mirror, where the optical system includes a plurality of optical path turning systems that turn optical paths of the deflected light beams, where the optical path lengths are substantially the same, and the optical path turning system which is the farthest away from the polygonal mirror includes a prism having two reflection surfaces, including a first reflection surface which is positioned along a direction in which the light beams are deflected by the polygonal mirror, as will be recited in Applicants' independent claim 1 upon entry of the present amendment.

For at least these reasons, Applicants respectfully submit that, upon entry of the present amendment, claim 1 will be in condition for allowance. Thus, Applicants respectfully request that the Examiner enter the present amendment, and withdraw the 35 U.S.C. § 103(a) rejection of claim 1.

Applicants respectfully submit that, upon entry of the present amendment, dependent claims 2, 3, 16 and 17 will also be in condition for allowance for at least the same reasons as set forth above with respect to independent claim 1.

In the Final Office Action, the Examiner rejected claims 1 and 15-17 under 35 U.S.C. § 103(a) as being unpatentable over Wang (U.S. Patent No. 6,219,168) in view of Andrews. Applicants respectfully traverse the rejection for at least the following reasons.

Wang is directed towards a ROS system 330 which includes a rotating polygon mirror 300 which reflects a first reflected modulated beam 320 to a first fold mirror 336 and a first motion compensating optical (MCO) element 338, reflects a second reflected modulated beam 322 to a second fold mirror 342 and a second MCO element 344, reflects a third reflected modulated beam 324 to a third fold mirror 348 and a third MCO element 350, and reflects a fourth reflected modulated beam 326 to a fourth fold mirror 354 and a fourth MCO element 356. See Figure 7 and col. 7, line 51 – col. 8, line 12.

In the Final Office Action, the Examiner acknowledges that the optical path lengths of Wang's beams 320, 322, 324 and 326 are not substantially the same. However, the Examiner asserts that, in view of Andrews, it would have been obvious to modify Wang such that the optical path length of beams 320, 322, 324 and 326 are substantially the same. Applicants respectfully disagree.

Applicants respectfully submit that the arrangement of Andrews' filters, mirrors and photoreceptors is substantially different than the arrangement of Wang's mirrors and photoreceptors. Applicants respectfully submit that Andrews achieves equal path lengths with a system in which photoreceptors 24, 26, 28 and 30 are arranged in a line perpendicular to beams deflected from polygon mirror 18, whereas the photoreceptors 340, 346, 352 and 358 of Wang's system are arranged in a line parallel to beams deflected from polygonal mirror 300. See, for example, Figure 5 of Andrews and Figure 7 of Wang. Thus, Applicants respectfully submit that Andrews does not suggest modifying a mirror and photoreceptor arrangement such as Wang's to achieve equal path lengths.

Further, Applicants respectfully submit that the combination of Wang's fourth fold mirror 354 and fourth MCO element 356 does not include a prism having two reflection surfaces.

In view of the above, Applicants respectfully submit that the combination of Wang and Andrews fails to disclose or suggest a multi-beam scanning device which includes an optical system that converges deflected light beams on a plurality of objects to be scanned, which are arranged from a position closer to a polygonal mirror to a position farther from the polygonal mirror, where the optical system includes a plurality of optical path turning systems that turn optical paths of the deflected light beams, where the optical path lengths are substantially the same, and the optical path turning system which is the farthest away from the polygonal mirror includes a prism having two reflection surfaces, including a first reflection surface which is positioned along a direction in which the light beams are deflected by the polygonal mirror, as will be recited in Applicants' independent claim 1 upon entry of the present amendment.

For at least these reasons, Applicants respectfully submit that, upon entry of the present amendment, claim 1 will be in condition for allowance. Thus, Applicants respectfully request that the Examiner enter the present amendment, and withdraw the 35 U.S.C. § 103(a) rejection of claim 1.

Applicants respectfully submit that, upon entry of the present amendment, dependent claims 15-17 will also be in condition for allowance for at least the same reasons as set forth above with respect to independent claim 1.

In the Final Office Action, the Examiner rejected claims 4, 5 and 7-9 under 35 U.S.C. § 103(a) as being unpatentable over Andrews in view of Koide, and further in view of Sekikawa (U.S. Patent No. 6,304,360); rejected claim 6 as being unpatentable over Andrews in view of Koide, and further in view of Maruyama (U.S. Patent No. 6,346,957); and rejected claims 10-12 as being unpatentable over Andrews in view of Koide, and further in view of Kamikubo (U.S. Patent No. 6,115,164). Applicants respectfully traverse the rejections for at least the following reasons.

Applicants respectfully submit that Sekikawa, Maruyama and Kamikubo fail to overcome the deficiencies of Andrews and Koide. That is, Applicants respectfully submit that the various combinations of Andrews, Koide, Sekikawa, Maruyama and Kamikubo set forth by the Examiner fail to disclose or suggest a multi-beam scanning device which includes an optical system that converges deflected light beams on a plurality of objects to be scanned, which are arranged from a position closer to a polygonal mirror to a position farther from the polygonal mirror, where the optical system includes a plurality of optical path turning systems that turn optical paths of the deflected light beams, where the optical path lengths are substantially the same, and the optical path turning system which is the farthest away from the polygonal mirror includes a

prism having two reflection surfaces, including a first reflection surface which is positioned along a direction in which the light beams are deflected by the polygonal mirror, as will be recited in Applicants' independent claim 1 upon entry of the present amendment.

For at least these reasons, Applicants respectfully submit that dependent claims 4-12 will be in condition for allowance upon entry of the present amendment.

Based on the above, it is respectfully submitted that this application is now in condition for allowance, and a Notice of Allowance is respectfully requested.

SUMMARY AND CONCLUSION

Applicants recognize that the current status of the present application is after-Final. However, Applicants respectfully submit that entry of the present amendment is appropriate under the current circumstances, as the present amendment does not raise new issues requiring further search and/or consideration.

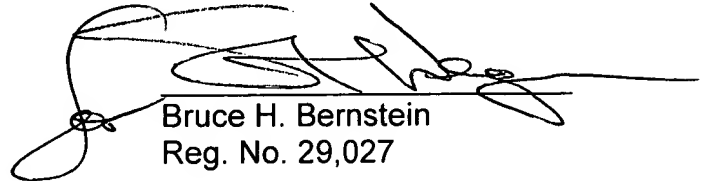
Entry and consideration of the present amendment, reconsideration of the outstanding Office Action, and allowance of the present application and all of the claims therein are respectfully requested and now believed to be appropriate. Applicants have made a sincere effort to place the present invention in condition for allowance and believe that they have now done so.

Any amendments to the claims which have been made in this amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should an extension of time be necessary to maintain the pendency of this application, including any extensions of time required to place the application in condition for allowance by an Examiner's Amendment, the Commissioner is hereby authorized to charge any additional fee to Deposit Account No. 19-0089.

Should the Examiner have any questions or comments regarding this response, or the present application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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